DOCUMENT RESUME

ED 201 224 HE 013 526

AUTHOR Tarr, Joel A.
TITLE The Carnegie-Mellon University Program in Technology Humanities: A Five Year Review.
INSTITUTION Carnegie-Mellon Univ., Pittsburgh, Pa.
SPONS AGENCY Andrew W. Mellon Foundation, New York, N.Y.
PUB DATE Aug 80
NOTE 12p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Curriculum; College Faculty; College Programs; Cultural Context; Engineering; Graduate Students; Higher Education; *Humanities; *Interdisciplinary Approach; *Research Projects; *Sciences; Social Problems; Speeches; Student Research; Teacher Exchange Programs; Technical Education; Technological Advancement; *Technology; Undergraduate Students

ABSTRACT

The Carnegie-Mellon University Program in Technology Humanities, which has been renamed the Program in Technology and Society, is described. The program was initiated in 1975 to stimulate interest, teaching, and research in the relationship between technology and society. The major achievements of the program in relation to its courses, support for research, symposiums and conferences, and visiting faculty are considered. In the program's five years of operation, 14 courses have been sponsored, 10 of which have become a part of the university's regular curriculum. The program also has supported 13 graduate student research projects. The program's courses and students involved in research, their research topics, and departments are listed. The topics that have been included in the program's speakers series are also listed, along with the groups on campus that have cooperated on each topic. Two visiting faculty have been in residence at the university under program auspices. Additionally, the program has sponsored a conference on Retrospective Technology Assessment, cosponsored a conference on Technological Projection, and hosted the annual convention of the Society for the History of Technology. It is suggested that through the courses and lecture series, students from architecture, engineering, the humanities, the sciences, and social sciences have widened their outlook in regard to the role of technology in society. Expansion of the program is also described. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED201224

THE CARNEGIE-MELLON UNIVERSITY PROGRAM IN TECHNOLOGY HUMANITIES: A FIVE YEAR REVIEW

Joel A. Tarr

August 1980

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Joel A. Tarr

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

HE 01 3526

I. The Carnegie-Mellon University Program in Technology Humanities: A Five Year Review

The Carnegie-Mellon University Program in Technology and Humanities was begun in 1975, partially funded by a $300,000 grant from the Andrew W. Mellon Foundation. The intent of the Program, as outlined in the proposal, was to stimulate interest, teaching and research in the relationship between technology and society. Now, at the end of the original five year grant period, the time has come to review the Program's accomplishments and to discuss possible new directions. The major achievement of the Program has been to encourage and stimulate interdisciplinary activity on campus in the technology-society area. This has been done through the mechanisms of courses, support for research, symposiums and conferences, and visiting faculty. Each of these will be discussed separately.

A. Program Sponsored Courses:

During the five years of its existance, the Program in Technology and Humanities sponsored fourteen courses. Six of these courses were offered three times, six were offered twice and two were presented one by a visiting professor. Of the fourteen, ten have become a part of the universities regular curriculum. A list of the fourteen courses follows, with the number of presentations in parenthesis. An asterick next to the course title indicates that it has become a regular university offering.

Origins of the American Engineering Profession (1)
The Automobile and Society (1)
*Technology and Social Change (2)
*The City and Technology (2)
*Philosophy of Technology (2)
*Philosophy of Science (2)
Science, Technology and Social Dynamics (2)
*Ecology in American History (3)
*Social and Technological Forecasting (3)
*Technology in Western Civilization (3)
*War and Technology (3)
*Technology-the Humanistic Response (3)
*R & D: The Origins and Development of Research and Development Policy (3)

All of these courses have been interdisciplinary in emphasis. Some have been jointly taught by individuals from technological and humanistic or social science disciplines and all have used visiting specialists for presentations on critical topics. For instance, a feature of the course on "Technology - the Humanistic Response," where class discussions involving specialists representing different positions on controversial subjects such as nuclear power. Another example can be drawn from the Technology and Social Change course, jointly taught by a historian and an engineer, where topics such as the deterministic nature of technology and the question of growth vs. no-growth were dealt with by visitors, as well as by regular faculty. In total faculty representing eight different departments, or subdepartments from the engineering, humanities and social science disciplines were involved in the presentation of Technology and Humanities course. The eight departments or subdepartments represented are English, History, and Philosophy (Humanities); Civil Engineering, Electrical Engineering, Engineering and Public

Policy, and Mechanical Engineering (Engineering); and, sociology (School of Urban and Public Affairs).

B. Research Support

During the past five years, the Program has supported thirteen graduate students research projects. Of these, six have involved either Ph.D. or Doctor of Arts dissertations. The students involved, with their departments and topics, are listed below:

Terry Yosie, Doctor of Arts, Program in History
"The Development of Water Quality Systems in Pittsburgh, 1819-1958"

James E. Tomayko, Doctor of Arts Program in History
"Irrigation Technology and the Agricultural Development of Western Kansas"

William Lampres, Doctor of Arts Program in History
"Smoke Control in Pittsburgh, 1940-1960"

James McCurley, Program in Applied History & Social Science
"The Evolution of Federal Water Pollution Policy, 1899-1972"

Gary David Goodman, Program in Applied History & Social Science
"Air Pollution Control in Comparative Perspective: Great Britain and the U.S.: 1900-1979"

Todd Shallat, Program in Applied History & Social Science
"The U.S. Army Corps of Engineers and its Transportation and Water Policy in the 19th Century."

Rachel Maines, Program in Applied History & Social Science
"Perceptions of Risk in Regard to Municipal Waste Disposal Practices: the Sanitary Landfill Movement in American Cities, 1930-1960"

Kathleen Ferraro, Department of English.
"Analysis of Content and Style of Early Magazine Articles about Computers"

Joseph Rudman, Department of English
"The Use of the Computer in Literary and Linguistic Studies"

Frank Porell, School of Urban and Public Affairs
"Exploration in the Social and Technological Structure of U.S. Metropolitan Areas: An Analysis of Standardized Occupational - Industrial Structure"

Ray Gutherie, School of Urban and Public Affairs
"Technological Forecasting in Organizations"

Michael Chappie, School of Urban and Public Affairs
"The History of Bus Regulation and the Impact of Entry Controls on Bus Service Provision"

Ronald Lasser, Department of Mechanical Engineering
"The Development and Impact of Electrical Power Generating Systems in Pittsburgh"

This research work has served both as a mechanism to support graduate students and as a means to involve faculty from various departments and disciplines in the area of technology-society studies.

C. Speakers Series'

An important device for keeping the campus aware and informed concerning technology-society topics and issues are visits by distinguished visitors from outside the university. During the course of its five year existance, the Program sponsored a number of speakers, both as part of campus-wide series and as individuals. Several of these series were presented in cooperation with other units on campus such as Sigma Xi and Campus Program Planning. A list of the various series presented follows, along with cooperating groups.

1975-76:

Topics in the History of Technology - 5 speakers
Arranged in cooperation with Departments of History and Engineering and Public Policy.

Forums in Science, Technology & Human Values - 5 forums including speakers and panels.

1976-77:

Series in Technology and Human Values - 5 speakers

1977-78:

Series in Food and the Population Crisis - 2 speakers
Arranged in cooperation with the Department of Chemical Engineering

Topics in the History of Technology - 2 speakers

Technology and Changing Life Styles - 5 speakers
Arranged in cooperation with the Graduate School of Industrial Administration

1978-79:

Series on Science, Technology and Society - 7 speakers
Arranged in cooperation with the CMU chapter of Sixma Xi

1979-80:

Series on Technology and Society - 6 speakers
Individual lectures arranged in cooperation with the Departments of Architecture and Engineering and Public Policy

D. Conferences and Visiting Faculty:

Over the course of the Program's five year history, two visiting faculty have been in residence at the University under Program auspices. The first was Dr. Clay McShane, a specialist in the history of urban technologies who taught courses in the History of Technology (fall, 1975) and the Automobile and Society (fall, 1975) and Origins of the American Engineering Profession, (Spring, 1976) during his visit.

The second visitor was Dr. Vary T. Coates, former Associate Director of the Program of Policy Studies in Science and Technology at the George Washington University. Dr. Coates, who has also worked for the Department of Energy, is a specialist in the areas of technology assessment and retrospective assessment. Her visit was arranged in cooperation with the Department of Engineering and Public Policy, and she taught a segment on science and technology policy in the Technology and Social Change course, spring, 1980.

In addition to presenting speakers in the technology-society area, the Program also sponsored a conference on Retrospective Technology Assessment (1976), co-sponsored a conference on Technolicical Projection (1978), and hosted the annual convention of the Society for the History of Technology (1978). The three day conference in Retrospective Technology Assessment, held in December, 1976, attracted attendees from universities, government agencies and corporations. The proceedings of the conference were published with

the aid of a National Science Foundation grant in 1977 and received a number of favorable reviews. Research in the area of Retrospective Technology Assessment has continued at Carnegie-Mellon University with Program support in respect to graduate student work.

E. Program Impacts

Over the course of five years, the Program in Technology and Humanities has had a number of impacts on students and faculty on the campus, as well as upon various groups outside the university. Through the courses, and various lecture series, undergraduate student from architecture, engineering, the humanities, and the sciences and social sciences have widened their outlook in regard to the role of technology in society and several have choosen to persue this area professionally. While some courses have been more popular than others courses such as Technology-the Humanistic Response, Technology and Social Change, and War and Technology have attracted an increased number of students each time they were presented. The various outside lecturers have not always drawn as well as expected but we hope in the coming year to correct this situation by involving the speakers with specific classes and utilizing more audio-visual presentations such as the "Connections" series from National Public Television.

The course mechanism has been extremely successful in attracting faculty from various discipoines into the technology and society area, as is demonstrated by the fact that representatives from eight departments in three disciplines have cooperated in teaching. The same function has been served by the graduate student research funds. These funds have served the desired purpose of attracting students to write dissertations and

seminar papers on technology-society topics, and they have also attracted a group of faculty from various disciplines into the area. In some cases these were faculty already teaching in the program, but in other cases they were not. The graduate student research funds, therefore, helped to enlarge the pool of faculty from throughout the university who were involved in aspects of the Program.

The final area where the Program has had an impact is outside the campus. One manner in which this influence has been exercised is through undergraduate and graduate students who were influenced by courses, speakers, and research. Graduate students, especially, who had received funds from the Program for research projects in the technology-society area, have moved on to positions in government and with universities with influence over students and policies in the technology-society area. Another means by which Program impacts have been spread is through the development of Retrospective Technology Assessment as a means improving our understanding of the past impacts of technology upon society as well as the technology assessment process.

Future Directions: Carnegie Mellon University

Program in Technology and Society

1. Curriculum Development

The Program in Technology and Society is proposing an extension and expansion of its course offerings. This development involves continuation of undergraduate courses and movement into the area of graduate education.

A. Ethics and Values in the Professions

During the past few years a new awareness has developed concerning the importance of ethical and value issues facing members of professions such as engineering, law, medicine, and the various sciences. Serious questions have arisen concerning the utilization of technologies such as nuclear power and dialysis machines, the disposal of chemical and radioactive wastes, and the development of genetic engineering. It is important that such issues be addressed systematically in a university such as Carnegie-Mellon with a large contingent of pre-professional undergraduates in applied fields. (These questions have been touched upon in other Program courses but never in a full course).

In addition to the above, pre-professionals, especially in the policy-related areas, are often trained to regard formal tools of analysis such as cost-benefit analysis as neutral or objective. We now realize, however, that such instruments have underlying ethical and value assumptions that influence their evaluation of policy.

The Program will sponsor the development and presentation of an undergraduate and a graduate course in the area of ethical and value questions in the professions. The courses will be structured along the following lines:

1. Undergraduate

This course would be developed and presented by resident and visiting faculty from several relevant disciplines such as philosophy, history, various social sciences, as well as engineering and science. It would be made available for students in the various professional programs in the engineering college (Carnegie Institute of Technology), the science college (Mellon Institute of Science), and the College of Humanities and Social Sciences.

2. Graduate

The graduate segment of the ethical and value package would focus on the ethical and value assumptions underlying instruments used to evaluate policy. It would be initially developed in the graduate Exploratory Research Methods Seminar of the Department of Engineering and Public Policy. Two 3 hour seminar sessions would be devoted to the topic. In each segment, a visiting specialist would make a presentation in the area, followed by a response by a panel of three. The seminar segments would be video-taped and transcripts edited.

Appropriate readings would be selected to produce an ethical-value curriculum package for dissemination to other departments at the university and to other schools involved in public policy.

B. Historical Perspectives on Contemporary Social and Technological Problems

The program in Technology and Society will create a graduate level pro-seminar that will focus on the historical background to contemporary social and technological problems. This course will build upon the experience of the Program in Retrospective Technology Assessment to develop historical perspectives useful for the understanding of contemporary social problems. It will be jointly taught by faculty members from the Department of History and the Social Science Department and be open to graduate students from both departments as well as the Department of Engineering and Public Policy.

II. Research Development

Research funds will be expended in basically three categories: faculty research, graduate student dissertation fellowships, and faculty-student research teams. Support for faculty research in the technology-society area is a new direction for the Program. Based upon the past five years of experience, it is expected that research funds will go primarily to students and faculty in Applied History, History, English, and the various Social Sciences.

III. Post-Doctoral Support

During the past decade, there has been a large dimunition in the number of jobs available to conventionally trained historians. Because of this, many talented individuals have been unable to find academic posts and have accepted positions outside the discipline. Almost simultaneously, however, opportunities for persons trained in the areas of the history of technology or technology studies have expanded. This expansion is a reflection of the public's increased concern over the role of technology in society and the growth of university based programs in technology studies.

The Program will establish a Mellon post-doctoral fellowship in Technology Studies at Carnegie-Mellon University. The University has established a reputation in the field of Retrospective Technology Assessment and has a core of people in several departments with whom a post-doctoral student could interact. Such a person is expected to embark on a major guided research project in the technology-society area.

IV. Speakers Series

The Program will continue its various series in the technology-society area for the next five years.